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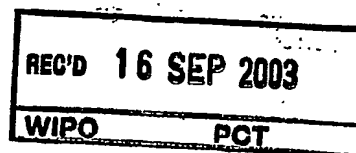
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Patentanmeldung Nr. Patent application No. Demande de brevet n°

02078955.8

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Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
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A system for associating different types of media content and method thereof

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A system for associating different types of media content and method thereof

EPO - DG 1

24. 09. 2002

(65)

The invention relates to a system for operating with different types of media content, the system being arranged to enable a user to use a first content of a first type.

The invention also relates to a method of operating with different types of media content, the method comprising a step of identifying a user's usage of a first content of a first type.

Document US2002/0002564A1 discloses data processing means for viewing, playback and delivery of continuous audio-visual data, media content such as a motion picture, video program, audio program etc. The media content, e.g. MPEG-1 system stream or in other format, and description data describing audio and video content are received by said means from outside, or said content and data can be stored in a database from which they can be retrieved. The description data are expressed through use of, e.g., Extensible Markup Language (XML) whose standardization is pursued by the World Wide Web Consortium.

The description data describe parameters of the audio and video content such as a title, caption, priority, location, start time, end time etc. Video and audio streams of the media content are mutually synchronized and provided to video playback means and audio playback means. The media content is further rendered for the user. In the known data processing means, the user may request or disable simultaneous rendering of the provided audio and video contents. The user may choose to be provided with only the audio part or only the video part of the available media content.

In the known data processing means, the audio and video contents correspond to each other since they are received together from a content provider, e.g. a TV broadcaster or the like. At the same time, the user may like simultaneous rendering of media contents which are not related by the content provider. It is a drawback of the prior art that user's preferences with respect to rendering the different contents are not taken into account.

It is an object of the present invention to provide a system for operating with different types of media content of the kind defined in the opening paragraph which does take into account the user's preferences with respect to simultaneous rendering of the different contents.

5 The object of the invention is realized in that the system comprises identifying means for identifying that the user concurrently uses a second content of a second type, said ~~second content being unrelated with the first content, and associating means for associating~~ said second content with the first content.

10 The contents of different types, e.g. audio and video, which are not associated by any reference in any way in the system may be related in the user's mind. For example, the user may like simultaneous rendering some contents of the different types, or the combination of the contents may carry the user back to some life experience, or the like. The system comprises identifying means and associating means for "registering" the relationship between such contents in the system. The identifying means identifies that the user uses, e.g.
15 watches, listens to, etc, a first content of a first type and, may be in a different way, a second content of a second type at the same time, wherein said first and second contents are not related in the system. The associating means associates said first and second contents to enable the system for exploiting that relationship.

20 One of the advantages of the present invention is that the user does not have to explicitly instruct the system to relate such contents because it may be done automatically and transparently for the user without hindering the user's usage of said contents. Another advantage is that the links between contents are made personal to the user of the system, which is not be possible when the contents, e.g. a TV program, movie which usually include audio and video, are obtained from the content provider.

25 The object of the present invention is also realized in that the method of operating with different types of media content further comprises a step of identifying that the user concurrently uses a second content of a second type, said second content being unrelated with the first content, and a step of associating said second content with the first content. The method describes functioning of the system of the present invention.

30

These and other aspects of the invention will be further elucidated and described with reference to the accompanying drawings, wherein:

Fig. 1 illustrates the general scheme of the present invention;

Fig. 2 shows a functional block diagram of the system suitable for implementing the present invention;

Fig. 3 shows an example of the associated contents of different types and the relationship between them;

Fig. 4 shows an example of a time sequence of the user's usage of different media contents;

Fig. 5 shows an embodiment of the method of the present invention.

Throughout the figures, same reference numerals indicate identical or corresponding components.

Many people today use a lot of media content. People watch, listen, browse different audio and video information, as well as create their own media content, e.g. by voice recording, taking pictures using a camera, making a home film etc. Various consumer electronic devices 110 such as a television set (TV set) with a cable, satellite or other link, video cassette recorder (VCR), home stereo, internet broadcasts, world wide web, portable and stationary radio, CD player, personal digital assistant (PDA) etc can be used for that purposes, as it is shown in Fig. 1. Each of these devices may have a user interface used to obtain, select, record, play etc the media content. Any one of such consumer electronic devices allows the user to use at least one media content, and some of such devices may output or input at least two contents of different types. The system according to the present invention comprises identifying means 120 for identifying that the user concurrently uses at least two contents of different types, whereas that contents are not unrelated in the system, e.g. the system does not include data indicating the relation between said contents. Such identifying means 120 may be any means capable of monitoring user's activities in the system, e.g. a monitoring camera connected to a devoted data processing unit which is arranged for analyzing the user's behavior by processing data obtained from the camera, said data processing unit may be a part of the consumer electronic device rendering the media content.

One or many media devices capable of outputting and/or inputting the media content may be included into the system. When a plurality of such devices are included, they may have means (not shown) for communicating with each other, e.g. the devices may be connected into a network. The communication means may be arranged for obtaining information about the user's usage of the content from each of the devices, and recognizing

individual devices providing said information. For example, each device outputs to the communication means its identification and information pertaining to the contents used by the user, e.g. the type of the used content(s) which may be one of predetermined types in the system, etc. Further details which concern functioning of the identifying means will be
5 apparent to the person skilled in the art.

The media content may basically comprise at least one or any combination of
~~visual information, audio information, text, data describing the media content or its~~

reproduction, or the like. The expression audio data, or audio content, is hereinafter used as data pertaining to audio comprising audible tones, silence, speech, music, tranquility, external
10 noise or the like. The expression video data, or video content, is used as data which are visible such as a motion picture, static image, characters etc. The user device may be arranged to obtain the media content stored on different carriers such as, audio tapes, video tapes, optical storage discs, floppy and hard drive discs etc in any format, e.g. MPEG (Moving Picture Experts Group), MIDI (Musical Instrument Digital Interface), Shockwave,
15 QuickTime, WAV (Waveform Audio), etc. The content may also be broadcast by a content provider, e.g. TV or radio, to be received by the user devices rendering said content for the user. The user may use the media content at home, public places, at the public transport and so on. Examples of the different types of content may be a play-list of songs or music, moving picture, still image or set of the still images, e.g. an image slide, animation, text,
20 meta-data related to the media content etc. For instance, the meta-data may define the radio content, e.g. radio stations and their the most frequently broadcast content, that is available in the area of user's living, the different kinds of playlists for setting up a collection of the media contents. The meta-data may, for example, include the music playlist, e.g. in which the next song is started when the current one ends, the radio station or television channel playlist,
25 e.g. comprising a collection of favorite channels to watch or surf through.

With reference to Fig. 2, a functional block diagram of the system of the present invention is shown. The system 200 comprises the identifying means 120 and associating means 210 for associating said two or more contents simultaneous use of which is identified by the identifying means 120. The identifying means outputs to associating means
30 the information concerning the contents concurrently used in the system. The associating means may be arranged for establishing data which link said associated contents, such as meta-data comprising the information pertaining to a relationship between the associated contents. In one example, the meta-data may include information about the associated contents such as a name/title, source of or link to the contents, e.g. identification of the

device(s) used for rendering the content; observed user's behavior during the use of the content(s), e.g. types of the user's behavior like watching, listening etc may be predetermined, whether or not the user initiated the content rendering, date, start and/or end time of the content usage, duration of rendering etc as it is shown in Table 1. Of course, some of the information included into the meta-data may be obtained from the identifying means

120.

TABLE 1

№	Name/title	Source/link	User's behavior	Initiated by user	Start date/time	Duration	Rating
n-1							
n	"Content A"	PC: D:\clips\clipN	Watching	Yes	07/07/02 01:30p.m	00:29:37	0,5
	"Content B"	Radio: songN	Disregard	No	07/07/02 01:36p.m		
n+1	"Content C"	PC: C:\video\fragmentN	Watching	Yes	09/07/02 06:12p.m	00:12:13	1,0
	"Content D"	CD-player: Disc"AlbumA"\trackN	Listening	Yes	09/07/02 06:06p.m		
n+2							

10

The associating means may be arranged to associate the contents automatically or to communicate information pertaining to the contents to the user for obtaining his/her approval for associating those contents. The system may also simply notify the user about associating the corresponding contents.

The system may optionally comprise storage means 220 arranged for storing the meta-data, selection means 230 arranged for selecting the content, output means 240 arranged for outputting the associated contents, and rating means 250 arranged for rating the associated content.

5 The meta-data may be implemented in any standard data structure or database, any language, e.g. XML, and include any amount of information about the associated contents which is sufficient to distinguish them. In one example, the meta-data may be stored in the storage means 220 together with the corresponding contents, e.g. in a header of the corresponding media data. The new meta-data may be established each time when some
10 contents are associated by the associating means. Thus, a plurality of meta-data records may be stored by the storage means.

 Given meta-data storing information about two associated contents, the selection means 230 may be arranged to identify the first content upon selection of the associated second content, and vice versa. Thus, the system can always find all associated
15 contents if one of them is selected and the relationship between those associated contents has been established. The output means may be arranged to play, reproduce etc the associated contents simultaneously.

 The selection means may be further arranged to function as a recommender of the media content. The recommender may exploit the meta-data for recommending the
20 content in accordance with the user's preferences. In that way, the recommendations can be made personal to the user.

 The recommender may be arranged for recommending the associated contents if the user selects one content and likes to be recommended with another content of different type in accordance to his/her preferences. The recommender may be further arranged for
25 recommending contents correlating to one of the associated contents e.g. having similar subject, topic, category, genre etc. For example, if the song and clip are associated, the recommender may recommend, upon the selection of the clip, the associated song and other songs which are similar to the associated song.

 The recommender may be arranged to recommend the content on the basis of
30 rating provided by the rating means 250. The meta-data may be interpreted in different ways for rating them, e.g. as an explicit or implicit feedback from the user. For example, the media contents may be considered as explicitly associated by the user if the user has explicitly initiated reproduction, or the other way of a user's consumption, of both media contents, e.g. user's requests for rendering the contents were inputted to the system. The rating means 250

may highly rate such association of the contents, or a high reliability may be assigned to such association. As it shown in Table 1, the (N+1) meta-data record indicates that the user initiated displaying the video content C and playing the audio content D. Therefore, the contents C and D are associated with the maximum rating, for example with one point as a maximal possible rating. If one of the contents was not explicitly chosen for rendering or using it otherwise by the user, then the association of that contents may be rated lower or given less reliability. For example, in Table 1 the contents A and B are associated with a rating lower than the rating of contents C and D, namely with 0.5 point out of 1, because the content B, a song, was played on the radio, and the user did not initiate that playing.

Other criteria for evaluating the association of the contents may be used by the rating means. For example, the association of the media contents may be also influenced by the user's behavior during simultaneous rendering of the content, a user's reaction for initiating simultaneously rendering of the contents when it was started by the system itself, and so on. Other parameters and characteristics of the associated contents, user's usage of the associated contents etc may be stored in the meta-data and used for their rating.

In a further embodiment, the rating means may rate the associated contents depending on the number of times of using the associated contents simultaneously. For instance, if the contents were often used together, they are rated highly.

In a further embodiment, if the first content is associated with the second content and with a third content, the rating means may be arranged for rating said associations of the first content with the second content, and the first content with the third content differently. For example, the association of the first content and second content may be rated higher if the first content was more often used with the second content than with the third content. In another example, the association of the first content may be rated higher with the second content if the simultaneous usage of the first and second contents is more recent than the usage of the first and third contents. Thus, such associated contents are rated higher if they were recently used.

An example of associated contents is shown with reference to Fig. 3. Content "audio 1" 310 is associated with content "video 1" 320, such association illustrates the idea of the present invention about association of the contents of different types. At the same time, content "video 1" 320 may be further associated with the other contents of different type, e.g. "audio 2" 330, "audio 3" 340 etc. The type of content "music playlist" 350, which is also associated with content "video 1" 320, may be considered as a separate type of the content corresponding to the group of contents of type "music". In turn, contents "audio 1" 310 and

“audio 3” 340 may be associated with content “image 1” 360 and content “video 1” 320. In this example, if the user selects content “audio 3” and requests the recommender to recommend the media content of type different from type “audio”, the recommender may recommend contents “image 1” 360 and “video 1” 320 since they are associated with the user-selected content “audio 3” 340.

With reference to Fig. 4, an example of media contents used at different time in the system is shown. “Media content 1” 410 was used in the system from time T11 (411)

till time T12 (412), “media content 2” 420 – from time T21 (421), “media content 3” 430 – from time T31 (431). Contents 410, 420 and 430 have different time length of their usage.

The usage of content 410 was started earlier than the usage of content 420, though this difference in time (T21-T11) is much less than the duration (412-421) of the simultaneous usage of contents 410 and 420. The identifying means 120 may be arranged to provide a starting time, ending time, time of simultaneous usage of the contents to the associating means 210 for including said time information into the corresponding meta-data. The associating means may be arranged to estimate a ratio between duration of simultaneous usage (412-421) of the corresponding contents and time difference (T21-T11) or difference of times when the use of corresponding contents ends. In one example, the associating means may be arranged to ignore the simultaneous usage of the contents and the respective meta-data may not be established if the duration of simultaneous usage of them is much smaller than a their non-overlapping in time usage of them. For example, the duration (412-431) of simultaneous usage of contents 410 and 430 is rather small with respect to the duration of their non-overlapping in time usage. The associating means may include a value of said estimated ratio into the respective meta-data. In another example, the rating means may rate the association of contents basing on said ratio. For instance, the association of contents 410 and 420 may be rated higher than the association of contents 410 and 430 in view of that the considerations above.

In one of the embodiments of the present invention, the selection means 230 may enable the user to modify the meta-data in the system. Of course, an appropriate user interface including input means, e.g. keyboard, mouse, touch-screen, speech recognition means etc, may be provided, and the output means 240 may be arranged to present the meta-data to the user via, for instance, display device, audio reproduction means etc.

The identifying means, associating means, selection means, rating means may be implemented using a microprocessor (not shown) coupled to random access memory and read-only memory (ROM) storing a program which when executed by said microprocessor

can perform functions of said means as described above. The storage means 220 may be realized with said ROM. The media content may be stored locally in the system or downloaded from an external source by means of suitable arranged data receiving means (not shown). The realization of such microprocessor system with corresponding internal and external circuits will be apparent to the person skilled in the art and need not be discussed herein.

With reference to Fig. 5, the method of the present invention describing operation of the system of the present invention is shown. According to the method of operating with different types of media content, the concurrent usage of the first content and second contents of different types is identified at step 510, wherein the relationship of said contents is not known in the system. At step 520, said first and second contents are associated as being related by the simultaneous user's usage of them. For instance, the user may watch a slide show of pictures on the display screen together with a certain song being played by the CD player in the system, or the user may often listen some song when the user would like to download certain pictures. Such contents being used by the user simultaneously are associated. Embodiments of the method, which correspond to the described above embodiments of the system of the present invention, may be envisaged.

The various program products may implement the functions of the system and method of the present invention and may be combined in several ways with the hardware or located in different devices. Variations and modifications of the described embodiment are possible within the scope of the inventive concept. Thus, for example, the use of the verb 'to comprise' and its conjugations does not exclude the presence of elements or steps other than those defined in a claim. The invention can be implemented by means of hardware comprising several distinct elements, and by means of a suitably programmed computer. In the device claim enumerating several means, several of these means can be embodied by one and the same item of hardware.

A 'computer program' is to be understood to mean any software product stored on a computer-readable medium, such as a floppy-disk, downloadable via a network, such as the Internet, or marketable in any other manner.

CLAIMS:

EPO - DG 1

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24. 09. 2002

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1. A system for operating with different types of media content, the system being arranged to enable a user to use a first content of a first type, characterized in that the system comprises:

- identifying means for identifying that the user concurrently uses a second content of a second type, said second content being unrelated with the first content, and
- associating means for associating said second content with the first content.

2. The system of claim 1, further comprising storage means arranged for storing meta-data comprising information pertaining to said associated first and second content.

3. The system of claim 1, further comprising selection means arranged for selecting the content.

4. The system of claim 2 and 3, wherein said selection means are further arranged to identify the first content upon selection of the associated second content and/or to identify the second content upon selection of the associated first content, using said information stored in the meta-data.

5. The system of claim 4, wherein said selection means are further arranged to function as a recommender for recommending the associated first or second content upon a user-operable selection of one of said associated second and first content respectively, using said selection means.

6. The system of claim 4, further comprising output means arranged for simultaneous outputting said associated first and second contents.

7. The system of claim 2 and 3, wherein said selection means are further arranged for user-operably modifying said meta-data.

8. The system of claim 1, wherein said identifying means is arranged to identify a user's usage of a third content of a second or other type, said usage being concurrent to said user's usage of the first content, and said third content being unrelated with the first content, and wherein said associating means is arranged to associate said third and first contents, the system further comprising rating means arranged for rating said association of the first content with the second content and/or with the third content.
-
9. The system of claim 1, comprising a plurality of devices, each device including output means arranged for outputting at least one type of the media content, and/or input means arranged for obtaining at least one type of the media content.
10. The system of any one of the preceding claims, wherein said first and second content correspond to video and audio content.
11. A method of operating with different types of media content, the method comprising a step of identifying a user's usage of a first content of a first type, characterized in that the method further comprises
- a step of identifying that the user concurrently uses a second content of a second type, said second content being unrelated with the first content, and
 - a step of associating said second content with the first content.
12. A computer program product enabling a programmable device when executing said computer program product to function as the system as defined in claim 1.

ABSTRACT:

EPO - DG 1

24. 09. 2002

(65)

The invention relates to a system for operating with different types of media content, the system being arranged to enable a user to use a first content of a first type. The system comprises identifying means (120) for identifying that the user concurrently uses a second content of a second type, said second content being unrelated with the first content, and associating means (210) for associating said second content with the first content. The invention also relates to the method of operating with the different types of media content.

Fig. 1

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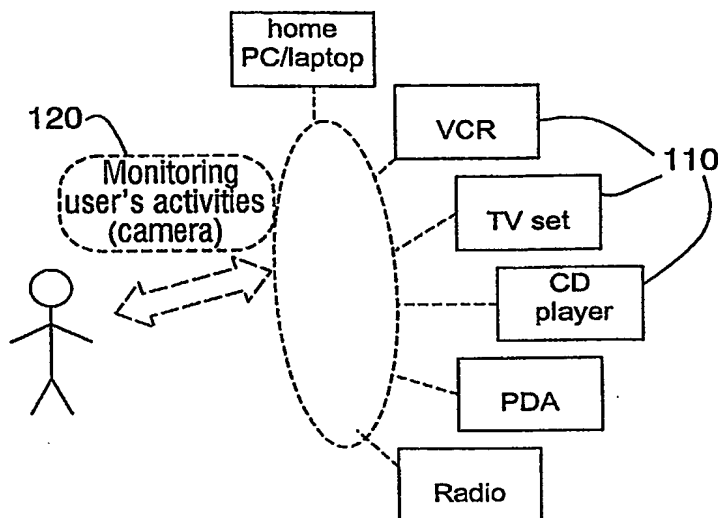


FIG. 1

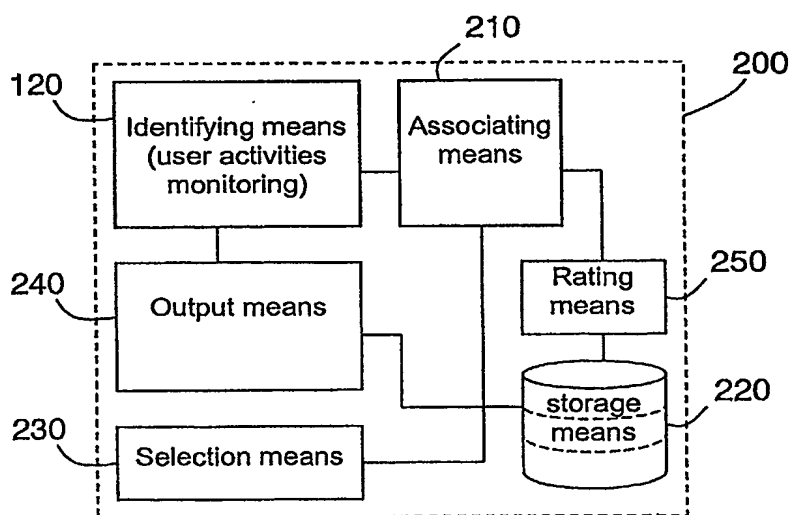


FIG. 2

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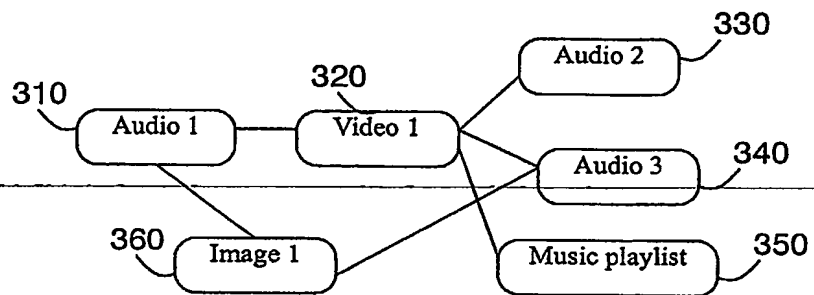


FIG.3

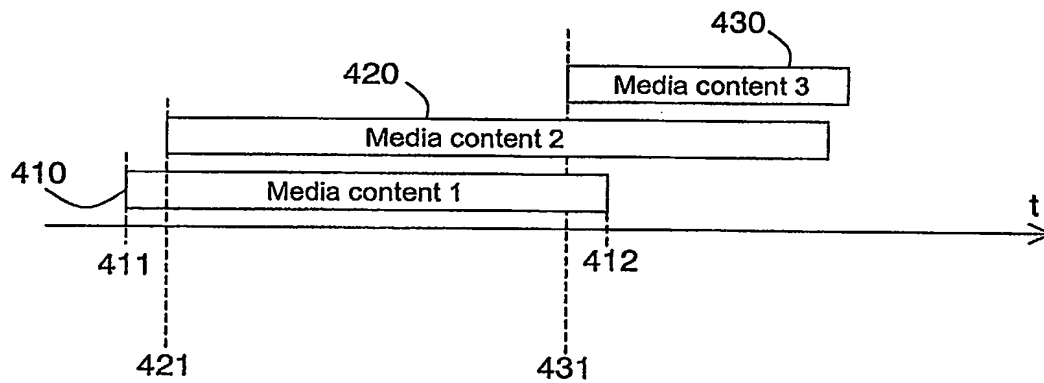


FIG.4

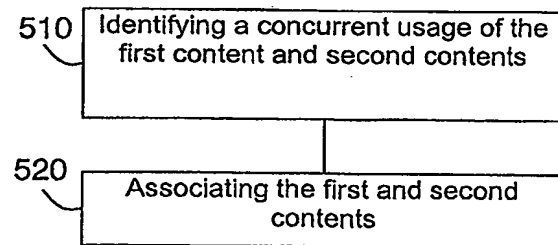


FIG.5

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